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## Celebrities and ordinaries in social networks: Who knows more information?

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### ABSTRACT

This paper tests the information contained in messages that various types of users post on social networks. Our data come from Sina Weibo, the biggest social network in China. The users are classified as either celebrities or ordinaries. We find that postings from celebrities significantly predict stock returns, whereas postings from ordinaries have no predictive power. Furthermore, postings from celebrities contain more future public information and current private information. Ordinaries' postings contain only stale information. The event study suggests that ordinaries can be considered as information followers rather than providers. These results are consistent with the informed guru hypothesis.

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## 1. Introduction

The rise of social media has resulted in more information to the stock market. Users in social media are allowed to post freely and without strict supervision. Thus, different qualities of information are provided by different users. More specifically, some users, such as fund managers, analysts, CEOs of listed companies, etc., tend to be more professional and influential than others and can be seen as social-network “celebrities.” These types of users have more social relationships and information channels than “ordinaries”. Considering that both celebrities and ordinaries post messages on social networks, an interesting question for the stock market is this: Do celebrities in the social network provide more accurate and valuable information than ordinaries? Which types of users in social networks have more information than the public media? The answers to these questions can provide us with a greater understanding of the impact of social networking on stock price as a novel information channel. Moreover, it also helps us better understand the parts played by different categories of users in the information-diffusion process of social networking.

Our study addresses the questions that are outlined above. Our data are collected from the most pervasive social media in China, Sina Weibo, which can be considered China's Twitter. More specifically, our data come from the early stage of the Weibo platform, when it had rigorous criteria to verify social-network “celebrities.” Celebrities must use their true names on Weibo and their career is open to the public, whereas ordinary users can remain anonymous. In the pursuit of social

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reputation (Hsu and Lin, 2008), celebrities may obtain more accurate and timely information than ordinaries, releasing information before it is published by the traditional media. We collect all the original postings on CSI 100 constituents from June 1, 2010, through May 15, 2011, on the Weibo platform. The postings are then separated into posts by celebrities and posts by ordinaries. In the first step, we examine the relationship between the postings of different types of users and future abnormal returns. The results document that celebrities' postings can predict stock return, a finding that is consistent with the informed guru hypothesis (Chen et al., 2014; Dong et al., 2015), which suggests that celebrities are incentivized to be gurus, supply more accurate information to the market and harvest more social fame. In contrast, we find that ordinaries' postings have no predictive ability with respect to return. This finding does not support the word of mouth hypothesis (Hong et al., 2005; Ivković and Weisbenner, 2007).

We also examine the question of whether social-network users have more information than the public media. We use public news and unexpected order imbalance as proxies for public information and private information, respectively, to investigate the predictive power of postings by various types of users. Our results demonstrate that celebrities' postings can predict public news in the next period and unexpected order imbalance in the current period. In contrast, ordinaries' postings have no predictive power with respect to either public or private information. These findings implied that postings by celebrities contain more information than postings by ordinaries, thus reconfirming the informed guru hypothesis. Celebrities may obtain a listed company's upcoming news and release it on the social network before the public announcement, resulting in an increase in market orders based on private information (Bhattacharya et al., 2000). The results for ordinaries indicate that information content in the postings of ordinaries might be either stale information or mere noise.

Moreover, we use event study to determine the change in cumulative abnormal returns (CAR) around extreme posting days of different types users. The results indicate that a significant 3.5% increase of CAR following the day of extremely posting of celebrities, while no significant increase of CAR after the day of extremely posting of ordinaries. These results suggest that ordinaries can be considered as information followers. Their postings focus on stale information, which has already been incorporated into stock prices.

Our work contributes to the emerging literatures on social media. Many studies discuss whether investors' online messages have predictive power for stock returns (Tumarkin and Whitelaw, 2001; Antweiler and Frank, 2004; Das and Chen, 2007); other studies discuss this issue in the context of tweets (Bollen, 2011; Sprenger and Welp, 2014). Most studies find that the number of online postings cannot significantly predict stock returns. Our results on ordinaries' postings are consistent with the studies set forth above. However, we also find that celebrities' postings are significantly predictive of abnormal returns. This is the key difference between our study and earlier studies: our study categorizes users into various types based on their possible information channels and incentives. Another contribution of our study involves the relationship between social media and public media. Antweiler and Frank (2004) also find that online messages significantly predict news published in the Wall Street Journal. However, for social networks, our study shows that news in the public media is only predicted by celebrities' postings.

## 2. Hypothesis and related literatures

Our study includes three hypotheses. The reputation incentive for celebrities to release useful information and affect stock prices can be explained by the informed guru hypothesis (Chen et al., 2014; Dong et al., 2015). Dong et al., (2015) hypothesize that bloggers have an incentive to become stock-market gurus. They must release information to build a long-term reputation. Chen et al. (2014) also find that the Website "seeking alpha" pays bloggers based on the number of followers, which incentivizes bloggers to release accurate information. Some studies on social reputation (Hsu and Lin, 2008) also argue that the pursuit of social reputation is an important motivation for users to share information and knowledge with others on social networks. In our study, celebrities, whose postings include their true names and career information, post messages to followers. Therefore, they are incentivized to broadcast information for an exchange of social reputations.

Additionally, we may observe that ordinaries' postings contain information. The word-of-mouth hypothesis (Hong et al., 2005; Ivković and Weisbenner, 2007) provides an explanation for this possible result. Hong et al. (2005) find that mutual-fund managers' trades are connected to the trades of other fund managers located in the same city, which are interpreted by information-diffusion model based upon word-of-mouth. Ivković and Weisbenner (2007) find that information diffuses through "word-of-mouth" in a way that induces a significant correlation between households' stock purchases and stock purchases made by their neighbors. Nofer and Hinz (2014) also find that word-of-mouth might exist on the Internet. Inspired by the studies described above, we formulate a hypothesis based on the word-of-mouth effect positing that ordinaries' postings on social networks can be seen as a channel of private information exchange.

The possibility that no valuable information is contained in the postings of either celebrities or ordinaries might be explained by the noise talk hypothesis. Kim and Kim (2014) find that information on Internet message boards has no significant predictive power for abnormal returns. The cheap-talk model (Crawford and Sobel, 1982; Benabou and Laroque, 1992; Dev, 2013) suggested that because of the freedom from supervision, information senders tend to strategically distort information to obtain profits from information receivers. At equilibrium, receivers lose trust in senders. This idea is empirically supported by Depken and Zhang (2010) with online data. Another possible reason is that postings only contain stale information. In the efficient market, price incorporates all value-relevant information as soon as it becomes available (Patell and Wolfson, 1984; Chordia et al., 2005). If users are public information followers, their postings will only contain stale information, which will not affect stock prices.

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